

ABSTRACT

An approach for compensating for losses in a tunable laser filter comprising includes providing a tunable waveguide material and an amplifying material that have different compositions. The tuning material and the
5 amplifying material are placed parallel to one another. The amplifying material is disposed so that it covers the tuning material at discrete locations. Carriers are injected simultaneously into both materials. The tuning material is spaced from the amplifying material at an average distance that is greater than the
10 charge carrier diffusion length, so as to reduce avoid diffusion of charge carriers from the tuning material into the amplifying material. This prevents the amplifying material draining the charge carriers out of the tuning material, thus enabling the refractive index of the tuning material to be tuned for a desired wavelength effect.